

**Committee on Commerce  
Subcommittee on Energy and Power  
Hearing on Electric Utility Industry Restructuring  
May 9, 1997**

**Dallas, Texas**

Testimony of **CellNet** Data Systems, Inc.

SUMMARY

**CellNet** Data Systems, Inc. ("**CellNet**") is pleased to offer testimony on the benefits of allowing customers to choose their energy provider. **CellNet's** testimony focuses on metering issues in electricity deregulation and competition.

**CellNet** strongly supports the principle of customer choice. Customer choice will result in consumer savings that have been projected in independent studies to be as high as 40 percent, as well as consumer access to numerous new and innovative **energy-**related products and services.

Fundamental to successful customer choice is advanced metering technology. Fortunately, such technology is available and low cost, as low as one to two dollars per customer per month. In the competitive electricity market, this technology is needed to **ensure** that consumers realize the following benefits:

- A range of new services, including lower rates for off-peak power use, automatic outage detection, power theft detection, remote switch-on and switch-off of service, and flexible and more accurate billing.
- The desired efficiency improvements in the electric industry
- Savings for customers who can reduce their peak energy use
- Choice of a variety of pricing and service options, not just supplier
- Ability for consumers to offset the market power of generators
- Enhanced reliability via price-based matching of supply and demand
- Access to many new services, ranging from cost-effective home energy management to low-cost home security.

## DETAILED **TESTIMONY**

**CellNet** Data Systems, Inc. ("**CellNet**") is pleased to offer the **following** testimony regarding the benefits of allowing customers to choose their energy provider. **CellNet's testimony focuses on metering issues in electricity** deregulation and competition. **CellNet** has been an **active** participant in regulatory **proceedings** throughout the U.S., contributing expertise on technical and economic aspects of metering.

To begin, **CellNet** strongly supports the principle of customer choice. Customer choice will result in consumer savings that have been projected **to be as high as 40** percent (U.S. **Federal Reserve and Citizens for a Sound Economy Foundation**), **as well as consumer access to a host of new and innovative energy-related** products and **services**.

Metering and related technology is a critical consideration in electricity deregulation for the following reasons:

- Without proper metering the desired efficiency improvements in the industry — and projected savings -will not materialize.
- Such metering, "hourly metering," results in society's "triple win" of deregulation identified by the California Public Utilities Commission: savings for customers who can reduce their peak energy use, deferral of new peaking power plants, and better utilization of existing plants.
- Hourly metering is needed for true choice, which means choice of a **variety** of pricing and service options; without it, customer choice is greatly limited and far less meaningful.
- Hourly metering is needed to enable consumers to offset the market power of generators, who can otherwise **manipulate energy prices in the** wholesale market.
- Hourly metering is needed for reliability: peak prices are the only effective way to match supply and **demand in a deregulated market**.

- Finally, advanced metering technology, Automatic Meter Reading, includes the ability to deliver a many new services, ranging from home energy management to low-cost home security.

Following is additional detail on these issues.

#### I. CONSUMER **BENEFITS OF NEW METERING TECHNOLOGY**

**CellNet's testimony describes the roles of innovative metering technology, first, in enabling power marketers to deliver a host of new energy-related products and services to consumers and, second, in providing the basic measurement infrastructure needed for proper functioning of a competitive electricity market.**

CellNet is a wireless data services company with facilities in several states. CellNet is based in California, where the PUC earlier this week decided to give all electricity customers choice beginning January 1, 1998 with no phase-in and no pilots. CellNet provides metering and communications services using wireless and other networks in six states to all sizes of utility customer. At a total cost as low as one to two dollars per month, and with no up-front charges, **CellNet's services are affordable to even the smallest energy users. C&Net's wireless technology also enables many other data services, including smart, communicating thermostats; these devices are the homeowner's equivalent of a building energy management system, but at a cost and level of simplicity suited for the small consumer.**

**This technology exists and is being deployed in scale today. Over 600,000 residential, commercial, and industrial energy users now have their meters read remotely via radio technology as often as every five minutes, and the number is growing by over 50,000 each month. With their meters on line, these customers now have the technology in place to receive several new services, some of which are already being offered to them by their local utility.**

**These energy consumers can now receive** detailed energy usage information to help them better manage their bills. They may soon be given the choice of which **day** of the month they receive their bills, perhaps the first of the month for Social Security recipients. They could receive an energy budget, updated daily. They no longer have to call the utility to report an outage — and, after an outage, the utility knows for sure that the customer's power is back on. They could receive off-peak discounts for charging **electric** vehicles or simply to use energy more **efficiently**. They could soon receive a bill that shows them about how much energy each of their major appliances uses -and how much they can save by replacing an old, inefficient refrigerator with a new one. And they will be able to receive information that allows them to compare pricing options from various power marketers and select the lowest cost approach.

In addition to benefiting consumers, this technology makes the deregulated market work. Studies by the U.S. Federal Reserve and others show that consumers may save as much as 40 percent on their electric bills as a result of deregulation, with even **low-cost** states yielding significant savings.

A major source of savings is efficiency. As the history of deregulation has proved, competitive markets are far more efficient: for example, in the airline industry, capacity utilization increased by over 30 percent as a result of deregulation, jumping to over 63 percent capacity utilization from a pre-deregulation figure of below 50 percent (both figures according to **the** Department of Commerce's Statistical Yearbook), which is where electric utility capacity utilization **sits** today (44 percent, according to the Energy Information Administration). To get this efficiency, however, energy users need to be **able to save when they reduce their peak energy usage, which requires new metering technology to measure the load drop.**

**Finally, advanced metering gives consumers an effective weapon to fight market power exercised by electricity generators and to ensure reliability in the deregulated electricity marketplace.**

## IL CONSUMER BENEFITS OF HOURLY METERING

**Hourly** metering will be necessary for customers to realize the full benefits of competition. It **will** enable customers to reduce costs and will **increase** the number of **choices that they can be offered. These benefits have been recognized broadly, by groups** ranging from the **Citizens** for a Sound Economy Foundation to the Natural Resources Lkfense Council.

Savings: Hourly metering will enable customers to respond to changing power market prices and to reduce costs by **shifting** load. This important **opportunity** to realize savings will not be available to customers who do not have hourly meters. Even though market energy prices will change hourly, those customers without hourly meters will be charged the same price per kilowatthour regardless of their **time** of use. The customer whose usage peaks at **6:00** a.m. will pay the same price as the customer whose usage peaks at **6:00** p.m. However, with the proper metering, consumers can save up to hundreds of dollars per year (such savings have been **documented** at Pacific Gas & Electric Company for residential customers on **time-of-use** rates).

Choice: Hourly metering enables customers to choose (and suppliers to offer) innovative rate options, such as time-of-use, real-time pricing, weekday/weekend rates, electric vehicle charging rates, and others. Indeed, choice of pricing scheme will be one of the few meaningful choices. Unlike with **other** products, electricity customers will not be able to choose based on product quality or performance. The ability to choose a pricing scheme that best suits their pattern of use will be one of the most useful choices a customer has. However, without advanced metering, these choices will not be available.

Reliability: Hourly metering will enhance **electrical** system reliability by enabling price to balance supply and demand. With hourly metering, the electricity market will work like other markets. When demand tightens, prices will increase; customers will see and respond to the price increases by reducing consumption; demand will fall, prices

**will** fall, and the system will balance. Without hourly metering, customers will not see those price signals. Price will not balance supply and demand.

Settlement Process: Hourly metering will improve the accuracy and fairness of the settlement process through the availability of more timely and accurate data. Statistical load **profiles** can be used for this purpose; however, actual metered data is far superior. As the California Public Utilities Commission noted in its **decision** on Direct Access, issued May 6, 1997, “it is our intent that statistical load **profiling** be an interim step towards customers utilizing metering technology that best **reflects** their **consumption...**”

System Efficiency: Hourly metering will also result in a more efficient use of the generating system, as customers shift load to non-peak periods to realize cost savings. This increase in efficiency will lead to reduced **costs** for all customers. According to the Electric Power Research Institute (“EPRI”) and the **Edison** Electric Institute (“**EEl**”), small customers have been able to reduce peak energy use by 20 percent in response to time-of-use rates (Impact *of Demand-Side* Management on *Future Customer Electricity Demand: An Update*, EPRI and EEI, 1990).

Market Power: Frank Wolak of Stanford University and Robert Patrick of Rutgers University, both economics professors, studied market power in the U.K. and found that the lack of hourly metering enables generators to manipulate market prices for energy and capacity, resulting in excess profits (*The Impact of Market Rules and Market Structure on the Price Determination Process in the England and Wales Electricity Market*, Frank Wolak and Robert H. Patrick, June 1996). They found that the lack of hourly (half-hourly in the U.K.) **metering** has resulted in serious market inefficiencies in the U.K., **including forcing** consumers to pay high market prices-sometimes exceeding 51.50 per kWh — during peak periods:

One of the problems in the United Kingdom is that most electricity consumers, including all residential customers, pay a price for electricity to their retailer that does not change in response to half-hourly variations

**in the** market-clearing price of electricity. Consequently, under the **current** system a very high market price brings about little, if any, demand reduction, because the final consumer of electricity does not pay this **price** for its electricity. (Press Statement, Stanford Center for Economic Policy Research, Professor Frank Wolak, January **17, 1997**)

### **III. THE COSTS AND BENEFITS OF AUTOMATIC METER READING**

Automatic meter reading (AMR) provides a highly cost-effective approach to hourly metering, and can bring the benefits of that technology to all customers – not just the largest customers.

The Association for Energy Affordability recognized these key points in comments filed last month with the New York Public Service Commission. The Association offered **two** key recommendations on metering:

We believe the benefits of advanced metering technology (hourly metering which makes possible time-of-use, **real-time** pricing) should begin to flow to all customers, not just the large industrials, from the earliest stages of retail access.

We contend that, since the “saturation” approach to installing network Automatic Meter Reading (AMR) technology . offers the best **opportunity to lower** overall metering costs, this alternative should be judged as the preferred long term approach to metering, and steps then taken to determine how most cost-effectively to implement this approach while preventing the creation of new stranded **costs**.

(Comments of the Association for Energy Affordability on the New York Public Service Commission ESCO Metering Subgroup Staff Draft Report, April 3, 1997)

By taking advantage of scale economies and operating cost savings, AMR-based hourly metering can be implemented at a gross cost of less than \$2.00 per meter per month and a net cost of less than \$1.00 per meter per month. (AMR itself is less than \$1.00 per meter per month.) According to the Direct Access Working Group in

California, this is less than one tenth **the** cost of the alternative approach of implementing advanced metering on a meter-by-meter basis.

There are several reasons why a network **approach** to metering is so **much** more cost-effective than a meter-by-meter approach. First, network AMR can make use of existing meters. The existing meters can be retrofit **with** a **radio unit which communicates** with a **poletop** communications node. By contrast, a meter-by-meter approach requires the replacement of the existing meters **with** new electronic meters. This is much more expensive and raises the specter of potential stranded costs due to the replacement of the existing meters.

Second, under a network approach, the intelligence can reside in the **poletop** communications node rather than in the meters themselves. A single **poletop unit** can serve hundreds of meters. **This** is far more cost-effective **than** putting **the** intelligence in each individual meter as is required in a meter-by-meter approach.

Third, there are geographically-based operating efficiencies. For example, a meter reader reading every meter is far more economical than one reading every tenth meter. This scale economy not only affects the cost of metering, but the opportunity for cost reductions. If an entity other than the distribution utility were to read **10** percent of the meters, not only would that entity's cost per read be much higher than the utility's, but the distribution utility would fail to realize any savings-since its meter readers would still have to walk by every customer.

These savings and other benefits for the distribution utility are substantial. Most obviously, they include greatly reduced meter reading costs. Utilities such as Kansas City Power and Light ("KCPL") that have implemented AMR have also realized the **following** additional benefits:

- High bill resolutions without a field visit because of the availability of real time reads.
- Improved meter reading accuracy.



- Usage on vacant accounts sets off usage alarms that initiates customer contact.
- Unauthorized **reconnections** of power are immediately identified.
- Connect/disconnect activities are accomplished without field visits due to **real time reads**.
- Outage alarms **identify** service outages without customer **communication**.
- Energy theft: According to Pacific Gas & Electric, **theft** costs all **electricity** consumers an average of **\$25 to \$40** per year; if implemented widescale, **AMR** can eliminate it.

Importantly, KCPL purchases metering services on functionality, rather than technology, on a per meter per month basis. The supplier provides all of the hardware and software, data communications and data management, planning and installation, operation and maintenance, etc. KCPL ratepayers have not assumed the technology or the financial risk<sup>5</sup> associated with the project, yet they receive all of the functional benefits of the technology. In addition, there is no cost to **KCPL's** ratepayers, and the **AMR** network is not in the ratebase.

### **III. POLICY FRAMEWORK FOR METERING**

CellNet supports the principle of leaving the details of implementing electricity deregulation to the States. In this section, however, **CellNet** addresses four important regulatory issues and offers proposed solutions based on experience gathered in various state jurisdictions considering metering issues.

**A. How Should Advanced Metering Technology be Deployed**

**In light of the benefits of innovative metering technologies, especially hourly metering, utilities should be encouraged to deploy advanced metering technologies, provided that**

- **there is no incremental cost to ratepayers and no creation of stranded costs;**
- **the technology has an "open architecture" (the California PUC is ordering utilities and others to develop an open architecture standard by July 25, 1997), and**
- **there is equal access to information by the utility and third party suppliers.**

Moreover, utilities should be given an appropriate economic incentive to pursue **AMR**, which would be to allow utility shareholders, since they must bear the risk of implementing AMR, to retain savings in excess of the cost of AMR.

**B. What About Employee Impacts of Automating Metering**

Technological innovations and the changes they bring often result in structural changes in segments of the economy. Automation of metering is no exception. So far, **CellNet's** utility customers have been able to offer other jobs to all meter readers displaced through implementation of AMR. **In** addition, as with many other technologies. AMR and a host of other low-cost wireless data markets -home security, vending machine monitoring, vehicle hacking, etc. -are expected to generate many more jobs than are lost. **CellNet** estimates that there are approximately 10,000 meter readers nationwide employed by electric utilities. This **compares to, for example, over 84,000 employees** in the cellular telephone industry, an industry with many parallels to AMR. In 1996 alone, the cellular industry added over 16,000 employees.

### **C. Who Should Own the Meter**

**The meter should be owned by whomever pays the incremental costs associated with it, whether that be the customer, the utility shareholders, the energy supplier, or a third party metering service provider. It would not be appropriate to require one party, e.g., the customer, to pay for the meter without giving him the economic benefits of ownership.**

**However, it is very important that meter ownership not create a barrier to choice of energy supplier. It is easy to imagine situations where, if a single supplier both owned the meter and provided the energy, it would be difficult for the customer to switch energy suppliers. However, this situation can be avoided through meter standards that call for the ability of the customer to use the same meter with different suppliers.**

### **D. Who Should Install, Calibrate, Read, and Maintain the Meter**

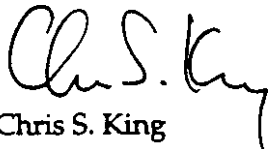
**There are several workable approaches to the issue of who should install, calibrate, read, and maintain the meter. One approach would be to keep these responsibilities with the regulated utility.**

**Another approach would be to make the customer's energy supplier responsible for these services. If the utility is the energy supplier, then it would continue to perform them. If another firm is the energy supplier, it could provide those services itself, or retain another firm to do it, including the incumbent utility. It may well be that the incumbent utility would have scale economies that would enable it to provide these services the lowest cost. Where the utility provides these services, it should offer them at the same price to affiliated and non-affiliated suppliers.**

#### **IV. CONCLUSION**

**Deregulation has historically opened the floodgates to new services and technologies. Before deregulation in other industries, for example, most consumers had never heard of automatic bank teller machines, frequent flier miles or discount phone rates. Similarly, the deregulation of the electricity industry and the advent of competition will encourage utility and power companies to enhance and differentiate their services.**

**CellNet greatly appreciates the opportunity to comment.**

A handwritten signature in black ink, appearing to read "Chris S. King". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

**Chris S. King**

**Vice President, Strategic Planning & Regulatory Affairs**

**Dated: May 6, 1997**